

MOUNTAIN FIBER LOOSEFILL™**CHEMICAL PRODUCT AND COMPANY IDENTIFICATION**

Product Name:	MOUNTAIN FIBER LOOSEFILL™	MANUFACTURER:	MOUNTAIN FIBER INSULATION, INC.
Chemical Formula:	(C ₁₁ H ₁₅ O ₅)-Na ₂ SO ₄ •H ₃ BO ₃		P.O. Box 337
Chemical Name/Synonyms:	Cellulose Insulation		Hyrum, UT 84319
Chemical Family:	Cellulose Treated With Inorganic Salts		
CAS Registry Number:	Not Established	EMERGENCY PHONE NUMBERS:	
TSCA Inventory Number:	Not Established	Mountain Fiber Insulation, Inc. 435-245-6081	

MOUNTAIN FIBER LOOSEFILL™ is a registered trademark of Mountain Fiber Insulation, Inc.

COMPOSITION/INFORMATION ON INGREDIENTS OSHA HAZARDS

This product contains on average recycled shredded-paper (82%) with sodium polyborate (18%). Sodium polyborate (CAS# 183290-63-3) is the active ingredient in this product and is used as a flame retardant. This chemical also has insecticide properties, which are beneficial to this building material. Sodium polyborate is applied to shredded-paper during the manufacturing process. Regarding information on the chronic and ecological toxicity of this product, we have reviewed the available medical and toxicological literature for 100% boric acid. Boric acid can be used in an identical manner, is chemically very similar to and slightly more toxic than comparable concentrations and exposures to sodium polyborate. Boric acid is hazardous under the OSHA Hazard Communication Standard based on animal chronic toxicity studies.

HAZARD IDENTIFICATION**EMERGENCY OVERVIEW:**

MOUNTAIN FIBER LOOSEFILL™ is a gray, odorless cellulosic fiber insulation material treated with inorganic salts for flame control. The product is not flammable, combustible, or explosive, and it presents no unusual hazard if involved in a fire. MOUNTAIN FIBER LOOSEFILL™ has relatively low acute toxicology via oral, dermal and inhalation routes of exposure (see "Toxicological Information" section for more information). Care should be taken to minimize the amount of MOUNTAIN FIBER LOOSEFILL™ released to the environment to avoid ecological effects.

POTENTIAL ECOLOGICAL EFFECTS:

Large amounts of MOUNTAIN FIBER LOOSEFILL™ can be harmful to boron-sensitive plants and other ecological systems.

POTENTIAL HEALTH EFFECTS:

Routes of Exposure: Inhalation is the most significant route of exposure in occupational and other settings. Dermal exposure is not usually a concern because MOUNTAIN FIBER LOOSEFILL™ absorption through intact skin is minimal¹.

Inhalation: Occasional mild irritation of nose and throat may occur from inhalation of MOUNTAIN FIBER LOOSEFILL™ dusts at levels greater than 2 mg/m³.

Eye Contact: MOUNTAIN FIBER LOOSEFILL™ is non-irritating to eyes in normal industrial use and has produced "mild" eye irritation in the Draize rabbit toxicology test².

Skin Contact: MOUNTAIN FIBER LOOSEFILL™ does not cause irritation to intact skin and has low acute dermal toxicity. Under the Hodge and Sterner Scale³ of acute toxicology it is considered to be "slightly toxic" via the dermal route of exposure.

Ingestion: Products containing MOUNTAIN FIBER LOOSEFILL™ are not intended for ingestion. MOUNTAIN FIBER LOOSEFILL™ is considered "relatively harmless" on the Hodge and Sterner Scale³ via oral ingestion. Small amounts (e.g. 3 teaspoonfuls or 10 grams) swallowed accidentally are not likely to cause effects; swallowing amounts larger than that may cause gastrointestinal symptoms.

Cancer: MOUNTAIN FIBER LOOSEFILL™ is not considered a carcinogen.

Reproductive: Long-term, high dose animal ingestion studies of similar inorganic borate chemicals at significantly higher concentrations have demonstrated reproductive effects in male animals. A human study of occupational exposure to borate dust showed no adverse effect to reproduction.

Developmental: Multiple high dose animal ingestion studies of similar inorganic borate chemicals at significantly higher concentrations have demonstrated developmental effects in fetuses of pregnant animals, including fetal weight loss.

Target Organs: No target organ has been identified in humans. Multiple high dose animal ingestion studies of similar inorganic borate chemicals at concentrations higher than from typical occupational exposures indicate the testes are the target organs in male animals.

Signs and Symptoms of Exposure: Symptoms of accidental over-exposure to borate products have been associated with ingestion or by absorption through large areas of damaged skin. Exposure via either route, given a sufficient dose and duration, might result in signs and symptoms such as central nervous system effects, kidney effects, nausea, vomiting, and diarrhea, with delayed effects of skin redness and peeling (via the dermal route). Refer to Toxicological Information Section for details.

¹ Wester R.C. et al. Toxicological Sciences, 45, 42-51 (1998)

² Smith S.H., et al. Primary Eye Irritation Study in Rabbits with InCide PC Insulation. American Biogenics Corp. Decatur, Ill. (1986)

³ Hodge H.C. and Sterner J.H. Combined tabulation of toxicity classes. Handbook of toxicology, WB Saunders (1956)

FIRST AID MEASURES

Inhalation: No specific treatment is necessary since MOUNTAIN FIBER LOOSEFILL™ is not likely to be hazardous by inhalation. Prolonged exposure to dust levels in excess of regulatory limits should always be avoided.

Eye Contact: Use eye wash fountain or fresh water to cleanse eye. If irritation persists for more than 30 minutes, seek medical attention.

Skin Contact: No treatment necessary because non-irritating.

Ingestion: Swallowing less than one teaspoon will cause no harm to healthy adults. If larger amounts are swallowed, give two glasses of water to drink and seek medical attention.

NOTE TO PHYSICIANS: Observation only is required for adult ingestion of a few grams of MOUNTAIN FIBER LOOSEFILL™. For ingestion in excess of larger amounts, maintain adequate kidney function and force fluids. Gastric lavage is recommended for symptomatic patients only. Hemodialysis should be reserved for massive acute ingestion or patients with renal failure. Boron analyses of urine or blood are only useful for documenting exposure and should not be used to evaluate severity of poisoning or to guide treatment.

FIRE FIGHTING MEASURES

General Hazard: None, because MOUNTAIN FIBER LOOSEFILL™ is not flammable, combustible or explosive. The product itself is a flame retardant.

Extinguishing Media: Any fire extinguishing media may be used on nearby fires.

Flammability Classification (29 CFR 1910, 1200): Non-flammable solid.

ACCIDENTAL RELEASE MEASURES

General: MOUNTAIN FIBER LOOSEFILL™ contains water-soluble inorganic salts that may cause damage to trees or vegetation by root absorption. (Refer to Ecological information for specific information)

Land Spill: Vacuum, shovel or sweep up MOUNTAIN FIBER LOOSEFILL™ and place in containers for disposal in accordance with applicable local regulations. Avoid contamination of water bodies during clean up and disposal. No personal protective equipment is needed to clean up land spills

Water Spill: MOUNTAIN FIBER LOOSEFILL™ will cause localized contamination of surrounding waters depending on the quantity dissolved in these waters. At high concentrations some damage to local vegetation, fish and other aquatic life may be expected.

MOUNTAIN FIBER LOOSEFILL™ is a non-hazardous waste when spilled or disposed of, as defined in the Resource Conservation and Recovery Act (RCRA) regulations (40 CFR 261). (Refer to Regulatory Information for additional references and information regarding EPA and California regulations.)

HANDLING AND STORAGE

Storage Temperature: Ambient

Storage Pressure: Atmospheric

Special Sensitivity: None known

General: No special handling precautions are required, but dry, indoor storage is recommended. To maintain package integrity, bags should be handed on a "first-in first-out" basis. Good housekeeping procedures should be followed to minimize dust generation and accumulation.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: Use local exhaust ventilation to keep airborne concentrations of MOUNTAIN FIBER LOOSEFILL™ dust below permissible exposure levels.

Personal Protection: Where airborne concentrations are expected to exceed exposure limits, NIOSH certified dust particulate respirators must be used. Eye goggles and gloves are not required for normal industrial exposures, but may be warranted if environment is excessively dusty.

Occupational Exposure Limits: MOUNTAIN FIBER LOOSEFILL™ is listed/regulated by OSHA and Cal OSHA as "Particulate Not Otherwise Classified" or "Nuisance Dust". ACGIH has published exposure limits for "Borate Compounds, Inorganic"

OSHA: PEL*	15 mg/m ³ total dust and 5 mg/m ³ respirable dust
ACGIH: TLV**	2 mg/m ³
ACGIH: STEL***	6 mg/m ³
Cal OSHA: PEL*	10 mg/m ³ and 5 mg/m ³ respirable fraction
	*PEL Permissible Exposure Limit
	**TLV Threshold Limit Value
	***STEL Short Term Exposure Limit

PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Gray, odorless fiber	Boiling Point:	Not Applicable
Specific Gravity:	0.7 compressed	Melting Point:	Not Applicable
Vapor Pressure:	Negligible @ 20°C	Flash Point:	Not Applicable
Solubility in Water:	Fiber is not soluble; Chemical additive is soluble at the rate of 4.7% @ 20° C.	pH:	7.2 (2.0% solution @ 25°C)
		Viscosity:	Not Applicable

STABILITY AND REACTIVITY

General: MOUNTAIN FIBER LOOSEFILL™ is a stable product.

Incompatible Materials and Conditions to Avoid: Reaction with strong reducing agents such as metal hydrides or alkali metals will generate hydrogen gas which could create an explosive hazard.

Hazardous Decomposition: None

TOXICOLOGICAL INFORMATION

INGESTION (ACUTE ORAL TOXICITY): The LD₅₀ of MOUNTAIN FIBER LOOSEFILL™ in rats is 19,879 mg/kg of body weight (insulation and boron compounds), which corresponds to “Relatively Harmless” on the Hodge and Sterner Scale^{2,4}. In a rat toxicity study which administered boric acid with food doses of 100, 275, and 400 mg/kg/d for 45 days, degenerative changes in kidney tissues were noted. More specifically, dilation of proximal, distal and collecting tubules; disconnecting and protrusion of some proximal tubule cells; proximal tubule cells with elaborated and enlarged basal infoldings; proximal tubule cells with increased number and size of phagosomes, and lysosomes and condensed mitochondria were noted in all dose groups after 10 days. Similar degenerative findings were noted after 30 and 45 days.

SKIN (ACUTE DERMAL TOXICITY): MOUNTAIN FIBER LOOSEFILL™ has low acute dermal toxicity; the LD₅₀ in rabbits is greater than 2000 mg/kg of body weight². MOUNTAIN FIBER LOOSEFILL™ is poorly absorbed through intact skin.

PRIMARY SKIN IRRITATION INDEX: “0” which is considered non-irritating.

MOUNTAIN FIBER LOOSEFILL™ is non-corrosive

EYE: The draize test in rabbits produced “mild” eye irritation effects. Many years of occupational exposure history reflects no indication of human eye injury from exposure to MOUNTAIN FIBER LOOSEFILL™.

NOTE: MOUNTAIN FIBER LOOSEFILL™ contains 19% inorganic borate compounds and 81% inert cellulosic fiber. The boric acid data discussed in this section relates to 100% pure boric acid, borax, or other inorganic borates.

INHALATION: Human epidemiological studies show no increase in pulmonary disease in occupational populations with chronic exposures to boric acid dust and sodium borate dust.

CARCINOGENICITY: A Technical Report issued by the National Toxicology Program showed “no evidence of carcinogenicity” from a full 2-year bioassay on boric acid in mice at feed doses of 2500 and 5000 ppm in the diet. No mutagenic activity was observed for boric acid in a recent battery of four short-term mutagenicity assays.

REPRODUCTIVE/DEVELOPMENTAL TOXICITY: Multiple high doses of boric acid to animals have shown a reduction or inhibition of sperm production, causing testicular atrophy, and, when given to pregnant animals during gestation, may cause developmental changes. These feed studies were conducted under chronic exposure conditions leading to doses many times in excess of those that could occur through inhalation of dust in occupational settings.

Reproductive Toxicity (Fertility): Dietary boric acid levels of 6,700 ppm in chronic feeding studies in rats and dogs produced testicular atrophy, while dogs and rats receiving 2000 ppm did not develop testicular changes⁵. In chronic feeding studies of mice on diets containing 5000 ppm (550 mg/kg/d) boric acid, testicular atrophy was present while mice fed 2500 ppm (275 mg/kg/d) boric acid showed no significant increase in testicular atrophy⁶. In another boric acid chronic study, in mice given 4500 ppm (636 mg/kg/d), degeneration of seminiferous tubules was present together with a reduction of germ cells, while at 1000 ppm (152 mg/kg/d) no effect was seen⁷. In a reproduction study on rats, 2000 ppm of dietary boric acid had no adverse effect on lactation, litter size, weight and appearance⁵. In a continuous breeding study in mice there was reduction in fertility rates for males receiving 4500 ppm (636 mg/kg/d) boric acid, but not for females receiving 4500 ppm boric acid^{4,8}.

Developmental Toxicity: Boric acid at dietary levels of 1000 ppm (78 mg/kg/d) administered to pregnant female rats throughout gestation caused a slight reduction in fetal weight, but was considered to be close to the NOAEL. Doses of 2000 ppm (163 mg/kg/d) and above caused fetal malformations and maternal toxicity. In mice the no effect level for fetal weight reduction and maternal toxicity was 1000 ppm (248 mg/kg/d) boric acid. Fetal weight loss was noted at dietary boric acid levels of 2000 ppm (452 mg/kg/d) and above. Malformations (agenesis or shortening of the thirteenth rib) were seen at 4000 ppm (1003 mg/kg/d)^{4,8}.

⁴ Intertox, Inc. A Review of the General Toxicity Studies of InCide Pest Control Insulation (1998)

⁵ Weir, R.J. and Fisher, R.S., Toxicol. Appl. Pharmacol., 23:351-364 (1974)

⁶ National Toxicology Program (NTP)-Technical Report Series No. TR324, NIH Publication NO. 88-2580 (1987), PB88-213475/XAB

⁷ Fail et al., Fund. Appl. Toxicol. 17, 225-239 (1991)

⁸ Heindel et al., Fund Appl. Toxicol. 18, 266-277 (1992)

ECOLOGICAL INFORMATION

ECOTOXICITY DATA:

Phytotoxicity: Although boron is an essential micronutrient for healthy growth of boron-sensitive plants, it can be harmful to plants in higher quantities. Plants and trees can easily be exposed by root absorption to toxic levels of boron in the form of water-soluble borate leached into nearby soil or waters. Care should be taken to minimize the amount of borate product released to the environment.

Fish Toxicity: Boron naturally occurs in sea water at an average concentration of 5 mg B/liter. In laboratory studies the acute toxicity (96-hr LC₅₀) for under-yearling Coho salmon (*Opeletichthys kisutch*) in sea water was determined as 40 mg B/L (added as sodium metaborate). Boron concentrations in fresh surface waters are generally less than 1 mg B/L. Laboratory studies on the toxicity of freshwater fish were determined using early life (embryo-larval) stages in natural water and boric acid as a test substance. The results were:

Rainbow Trout (*S. gairdneri*)
24-day LC₅₀=150.0 mg B/L
36-day NOEC•LOEC=0.75-1 mg B/L
Goldfish (*Carassius auratus*)
7-day NOEC•LOEC=26.50 mg B/L
3-day LC₅₀=178 mg B/L

Invertebrate Toxicity: The acute toxicity (48-hour LC₅₀) to Daphnids (*Daphnia magna* Straus) in natural water is reported to be 133 mg B/L (added as boric acid). Estimated chronic toxicity (21-day NOEC•LOEC) values of 6-13 mg B/L (added as boric acid) have also been reported.

ENVIRONMENTAL FATE DATA:

Persistence/Degradation: Boron and boron containing compounds are naturally occurring and ubiquitous in the environment. In the presence of water, sodium polyborate disassociates into natural borates.

Soil Mobility: The boric acid additive in MOUNTAIN FIBER LOOSEFILL™ is soluble in water and is leachable through normal soil.

NOTE: Boron (B) is the element in MOUNTAIN FIBER LOOSEFILL™ which is used to characterize borate ecological effects. To convert MOUNTAIN FIBER LOOSEFILL™ data to Boron (B), multiply by 0.021.

DISPOSAL CONSIDERATIONS

Disposal Guidance: Small quantities of MOUNTAIN FIBER LOOSEFILL™ can usually be disposed of at Municipal Landfill sites. No special disposal treatment is required, but refer to state and local regulations for applicable site-specific requirements. Tonnage quantities of product are not recommended to be sent to landfills. Such product should, if possible, be re-used for an appropriate application.

RCRA (40 CFR 261): MOUNTAIN FIBER LOOSEFILL™ is not listed under any sections of the Federal Resource Conservation and Recovery Act (RCRA).

California Hazardous Waste Designation: California identifies substances with acute LD₅₀'s less than 5000 mg/kg as "hazardous wastes". MOUNTAIN FIBER LOOSEFILL™ is therefore not a "hazardous waste" if spilled in California. Refer to Regulatory Information for additional information

TRANSPORT INFORMATION

DOT Hazardous Material Classification: MOUNTAIN FIBER LOOSEFILL™ is not a U.S. Department of Transportation (DOT) Hazardous Material.

DOT Hazardous Substance Classification: MOUNTAIN FIBER LOOSEFILL™ is not a DOT Hazardous Substance.

International Transportation: MOUNTAIN FIBER LOOSEFILL™ has no U.N. Number, and is not regulated under international rail, highway, water, or air transport regulations.

REGULATORY INFORMATION

TSCA No.: MOUNTAIN FIBER LOOSEFILL™ does not appear on the EPA TSCA inventory list. Boric Acid appears on the EPA TSCA inventory list under the CAS No. 10043-35-3.

RCRA: MOUNTAIN FIBER LOOSEFILL™ is not listed as a hazardous waste under any sections of the Resource Conservation and Recovery Act or regulations (40) CFR 261 et seq.).

Superfund: CERCLA/SARA. MOUNTAIN FIBER LOOSEFILL™ is not listed under CERCLA (the Comprehensive Environmental Response Compensation and Liability Act) or its 1986 amendments, SARA, (the Superfund Amendments and Reauthorization Act), including substances listed under Section 313 of SARA, Toxic Chemicals, 42 USC 11023, 40 CFR 372.65; Section 302 of SARA, Extremely Hazardous Substances, 42 USC 11002, 40 CFR 355; or the CERCLA Hazardous Substances list, 42 USC 9604, 40 CFR 302.

Safe Drinking Water Act: MOUNTAIN FIBER LOOSEFILL™ is not regulated under the SDWA, 42 USC 300g-1, 40 CFR 141 et seq. Consult state and local regulations for possible water quality advisories regarding boron.

Clean Water Act (Federal Water Pollution Control Act): 33 USC 1251 et seq.

- a.) MOUNTAIN FIBER LOOSEFILL™ is not itself a discharge covered by any water quality criteria of Sec. 304 of the CWA, 33USC 1314.
- b.) It is not on the Section 307 List of Priority Pollutants, 33 USC 1317, 40 CFR 129
- c.) It is not on the Section 311 List of Hazardous Substances, 33 USC 1321, 40 CFR 116.

OSHA/Cal OSHA: This MSDS document meets the requirements of both OSHA (29 CFR 1910.1200) and Cal OSHA (Title 8 CCR 5194(g)) hazard communication standards. Refer to Exposure Control/Personal Protection for regulatory exposure limits.

IARC: The International Agency for Research on Cancer (of the World Health Organization) does not list or categorize MOUNTAIN FIBER LOOSEFILL™ as a carcinogen.

NTP Annual Report on Carcinogens: MOUNTAIN FIBER LOOSEFILL™ is not listed.

OSHA Carcinogen: MOUNTAIN FIBER LOOSEFILL™ is not listed.

California Proposition 65: MOUNTAIN FIBER LOOSEFILL™ is not listed on any Proposition 65 lists of carcinogens or reproductive toxicants.

OTHER INFORMATION

Product Label Text Hazard Information: Refer to the official EPA product label for additional product Hazard and Precautionary information.

National Fire Protection Association (NFPA) Classification:

Health - 0, Flammability - 0, Reactivity 0

Hazardous Materials Information Systems (HMIS):

Red: (Flammability) - 0, Yellow: (Reactivity) - 0, Blue: (Acute Health) - 1*

*Chronic Effects

Information presented herein has been compiled from sources considered dependable and is accurate and reliable to the best of our knowledge and belief, but it is not guaranteed to be so. Nothing herein is to be construed as recommending any practice or any product in violation of any law or regulation. It is the user's responsibility to determine the suitability of any material for a specific purpose and adopt necessary safety precautions. We make no warranty as to results to be obtained in using any material and, since conditions or use are not under our control, we must necessarily disclaim all liability with respect to use of any material supplied by us.

Replaces all previous MSDS for MOUNTAIN FIBER LOOSEFILL™

For more information about Mountain Fiber Insulation, Inc.'s complete product line go to www.mtfiberinsulation.com